Probable Error of the Resulting Places.

In computing the probable error of these results, I have contented myself with the observations of the four stars which I call *e*, *f*, *g*, and *h*, as it appeared that the comparatively large number of observations obtained for each of these stars would give a more reliable result than could be obtained by taking the difference between each separate result and the mean of a small number of results for each star as the basis of calculation. All the stars of the list, too, being included between +8° and +18° of declination, and all being observed under exactly similar circumstances, any result applicable to the stars *e*, *f*, *g*, *h* will be equally so to the other stars of the list.

From all the observations of *e*, *f*, *g*, *h*, including the right ascension of *f*, on November 28, although this observation has been neglected in taking the mean, I find as the probable error of a single determination of right ascension, reduced to the equator, the quantity

$$\pm 0^{s}\cdot033,$$

while the probable error of a single determination of declination similarly computed is

$$\pm 0''\cdot42$$

Spectroscopic Results for the Motions of Stars in the Line of Sight, obtained at the Royal Observatory, Greenwich, in the year 1890. No. XIV.

(*Communicated by the Astronomer Royal.*)

The Results here given are in continuation of those printed in the *Monthly Notices*, vol. xxxvi. p. 318, vol. xxxvii. p. 32, vol. xxxviii. p. 493, vol. xli. p. 109, vol. xlii. p. 230, vol. xliii. p. 81, vol. xliv. p. 89, vol. xlv. p. 330, vol. xlvi. p. 126, vol. xlvii. p. 101, vol. xlviii. p. 116, vol. xlix. p. 127, and vol. l. p. 111.

The observations were made with the "half-prism" spectroscope, one "half-prism," with a dispersion of about 18½° from A to H, being used throughout. A magnifying power of 14 was employed.

The cylindrical lens has always been used in front of the slit, as in the observations made previously to 1881 and since 1882, March 14. The observations of the Sun, Moon, and planets have been made as a check on the general accuracy of the results.

The day specified in the first column is the civil day, and the hour is that of Greenwich civil time, commencing at Greenwich mean midnight, and reckoning from 0 to 24 hours.

The observations were made by Mr. Maunder throughout.

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The observations in brackets on September 15 have been rejected, as the comparison with the sky spectrum afterwards showed that the spectroscope was out of adjustment.

Motions of Stars in the Line of Sight in Miles per Second, observed with the Half-prism Spectroscope.

(+ denotes Recession; −, Approach.)

Date. 1890. G.C.T.	d	h	No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Measd.	Estimd.	Remarks.
						α Andromedæ.		
Aug.	2	0	2	F	−14·3	−10·8	−14·3	Star-line seen fairly well.
	7	0	2	F	−13·7	−58·9	−49·9	Star-line faint.
Sept.	9	0	2	F	− 7·3	− 8·1	− 7·1	Star-line seen fairly well.
	13	23	2	F	− 6·0	−12·5	−14·4	Star-line seen fairly well.
Oct.	1	22	1	F	− 1·2	−11·5	− 7·1	Definition bad.
	9	22	2	F	+ 1·1	+ 1·0	− 1·1	Definition bad.
	11	22	2	F	+ 1·7	−11·9	−14·2	Definition poor.
						β Cassiopeiæ.		
Aug.	7	1	2	F	−11·0	−26·7	−36·7	Star-line seen with difficulty.
Sept.	13	23	2	F	− 7·6	− 7·6	−10·3	Star-line faint.
Oct.	11	20	2	F	− 3·0	−13·6	−13·1	Star-line seen well.
						γ Pegasi.		
Sept.	9	0	2	F	− 6·5	+34·0	+30·6	Star-line seen fairly well.
	11	23	2	F	− 5·7	−54·0	−38·4	Spectrum faint.
	13	22	2	F	− 5·1	−45·2	−45·9	Star-line observed with difficulty.
Oct.	1	22	2	F	+ 0·3	−14·0	−14·8	Definition bad.
	9	22	2	F	+ 2·8	+ 3·6	+ 1·7	Definition poor.
	11	22	2	F	+ 3·4	+ 5·0	+ 5·6	Definition poor.
						α Cassiopeiæ.		
Sept.	15	22	2	b_1	− 8·6	(+36·2)	(+35·2)	Star-line exceedingly faint.
						γ Cassiopeiæ.		
Aug.	7	1	2	F	−11·8	− 7·2	− 8·9	Star-line feebly bright, and observed with great difficulty.
Sept.	13	23	2	F	− 9·3	+ 8·2	+ 9·3	
Oct.	11	20	2	F	− 4·9	+20·0	+20·4	
						δ Cassiopeiæ.		
Sept.	13	23	2	F	− 1·0	−13·5	−14·3	Star-line seen fairly well.
Oct.	11	20	2	F	− 6·0	+74·4	+53·6	Spectrum bright, but very unsteady. Definition bad.

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Date. 1890. G.C.T.			No. of Meas.	Line	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
	d	h				Measd.	Estimd.	
						β Arietis.		
Oct.	9	22	2	F	− 4·9	− 8·2	− 8·6	Star-line seen fairly well.
						γ Andromedæ.		
Sept.	15	23	2	b_1	−12·3	(−12·9)	(−19·2)	Star-line very faint.
						β Persei.		
Mar.	3	23	2	F	+16·4	−53·0	−57·0	Measures made with great difficulty.
	12	22	4	F	+15·2	−58·7	−54·0	Star-line seen fairly well.
Sept.	13	23	4	F	−15·0	+ 2·0	− 2·9	Star-line seen fairly well.
Oct.	9	23	2	F	−10·5	−52·7	−46·6	Star-line seen fairly well.
						α Persei.		
Mar.	12	22	2	F	+14·9	−44·4	−42·5	Star-line seen fairly well.
Sept.	14	0	2	F	−14·7	+ 0·6	− 3·2	Star-line seen fairly well.
Oct.	9	23	2	F	−11·1	+12·3	+11·1	Star-line seen fairly well.
						Aldebaran.		
Jan.	4	22	2	F	+11·2	+63·8	+38·3	Star-line seen with great difficulty.
Feb.	7	20	2	F	+17·7	+23·6	+35·6	Star-line seen with great difficulty.
	18	23	2	F	+18·5	+18·7	+32·5	Star-line faint.
Mar.	12	22	2	F	+18·0	+16·8	+20·9	Star-line seen with great difficulty.
	17	22	2	b_1	+17·4	+ 4·8	+24·4	Star-lines seen with great difficulty.
						Capella.		
Mar.	3	22	2	F	+17·1	+10·6	+23·5	Star-line seen fairly well.
	12	22	2	F	+17·1	+14·7	+26·1	Star-line seen with great difficulty.
	17	23	4	b_1	+16·9	+10·2	+32·4	Spectrum very unsteady.
Sept.	14	0	2	F	−16·7	+49·4	+54·1	Star-line faint.
	15	23	2	b_1	−16·7	(+57·7)	(+66·0)	Star-line very faint.
						Rigel.		
Feb.	18	20	2	F	+15·5	+29·1	+22·8	Definition fair.
Mar.	3	20	4	F	+16·0	+30·5	+29·6	Spectrum faint and very unsteady.
	12	20	2	F	+15·8	+14·7	+22·2	Definition bad.
Apr.	3	20	2	F	+13·7	+ 8·5	+ 6·3	Spectrum unsteady. Star-line faint.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
	d	h				Measd.	Estimd.	
						γ Orionis.		
Feb.	18	20	2	F	+17·0	+16·7	+12·8	Definition poor.
Mar.	3	20	2	F	+17·8	+13·2	+14·5	Spectrum faint and very unsteady.
	12	21	2	F	+17·8	−20·7	−17·8	Star-line seen fairly well.
Apr.	3	20	2	F	+15·9	−22·3	−18·4	Star-line faint and seen with difficulty.
						β Tauri.		
Feb.	18	21	4	F	+17·5	− 8·3	− 8·6	Definition poor.
Mar.	3	20	2	F	+18·4	+12·4	+16·7	Spectrum faint, but fairly steady.
	12	21	2	F	+18·5	+ 7·7	+11·7	Star-line seen fairly well.
Apr.	3	21	2	F	+16·8	−32·8	−39·3	Star-line seen fairly well.
						δ Orionis.		
Feb.	18	21	4	F	+16·1	+13·2	+12·8	Star-line seen with great difficulty.
Mar.	12	21	4	F	+17·0	− 6·7	− 6·2	Spectrum faint.
						ε Orionis.		
Mar.	12	21	4	F	+16·9	+ 9·0	+13·7	Spectrum faint and very unsteady.
						ζ Orionis.		
Mar.	12	21	4	F	+16·8	−16·8	−15·5	Star-line faint.
						α Orionis.		
Mar.	17	22	4	b_1	+17·8	+ 4·9	+19·9	Spectrum very unsteady, star-lines seen with great difficulty.
	17	22	4	b_4	+17·8	+19·1	+27·9	
						β Aurigæ.		
Feb.	18	23	2	F	+15·4	−11·6	−10·3	Star-line seen well.
Mar.	3	22	2	F	+16·8	−27·0	−29·7	Star-line very ill-defined.
	12	22	2	F	+17·2	−53·4	−55·2	Spectrum fairly bright, but unsteady.
						γ Geminorum.		
Feb.	18	22	4	F	+14·8	(−10·3)	(−14·8)	Very unsatisfactory. Observations very discordant *inter se*.
Mar.	3	21	2	F	+16·9	+ 7·9	+13·5	Definition fair.
	12	23	2	F	+17·8	−39·5	−48·0	Star-line seen fairly well.
	28	23	4	F	+18·3	−74·1	−80·3	Spectrum bright, but rather unsteady.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Measd.	Estimd.	Remarks.
	d	h						
						Sirius.		
Feb.	18	21	4	F	+ 10·7	− 6·9	− 8·2	Spectrum very unsteady.
Mar.	3	21	6	F	+ 12·6	− 8·7	− 8·9	Measures very rough.
	7	22	4	F	+ 13·0	− 33·5	− 34·7	Much cloud. Definition bad.
	12	20	6	F	+ 13·4	− 17·6	− 18·9	Definition very bad.
Apr.	3	21	2	F	+ 14·1	− 15·8	− 18·3	Spectrum very unsteady.
						Castor.		
Feb.	18	22	2	F	+ 12·3	+ 38·8	+ 55·7	Star-line seen fairly well.
Mar.	3	22	2	F	− 15·0	+ 23·8	+ 31·1	Star-line seen well.
	12	23	4	F	+ 16·4	+ 9·7	+ 11·2	Spectrum bright and fairly steady.
	22	0	2	F	+ 17·4	+ 3·7	+ 7·1	Star-line seen well.
	29	0	2	F	+ 17·8	− 9·3	− 6·5	Star-line seen well.
Apr.	22	21	2	F	+ 17·3	+ 19·6	+ 28·8	Star-line seen well.
	30	21	2	F	+ 16·6	− 10·2	− 5·1	Star-line seen fairly well.
May	23	22	2	F	+ 12·7	+ 68·6	+ 55·2	Spectrum faint.
						Procyon.		
Feb.	18	22	2	F	+ 10·6	+ 1·4	+ 14·9	Star-line seen well.
Mar.	3	21	2	F	+ 13·6	+ 0·5	+ 11·3	Star-line seen well.
	12	23	4	F	+ 15·2	− 29·0	− 28·2	Spectrum very unsteady.
	21	23	2	F	+ 16·4	− 30·7	− 33·3	Star-line seen well.
	29	1	4	F	+ 17·0	− 26·9	− 28·3	Star-line seen fairly well.
Apr.	22	21	4	F	+ 17·2	− 33·5	− 29·8	Star-line seen well.
	30	21	2	F	+ 16·7	− 12·0	− 7·5	Star-line seen fairly well.
						Pollux.		
Feb.	18	22	2	F	+ 11·6	− 23·1	− 21·8	Star-line seen with difficulty.
Mar.	3	21	2	F	+ 14·6	− 23·7	− 25·7	Star-line seen with great difficulty.
	12	23	2	F	+ 16·1	− 52·7	− 67·9	Star-line seen fairly well.
	17	23	2	b_1	+ 16·7	− 27·6	− 34·1	Star-lines seen with great difficulty.
	22	0	2	F	+ 17·2	− 68·4	− 73·6	Star-line seen well.
	29	0	2	F	+ 17·8	− 53·7	− 57·3	Star-line seen with difficulty.
Apr.	22	21	2	F	+ 17·7	− 49·2	− 47·6	Star-line seen fairly well.
	30	21	2	F	+ 17·0	− 61·6	− 53·8	Measures made with difficulty.
May	23	22	2	F	+ 13·4	− 61·4	− 59·2	Star-line seen well.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
	d	h				Measd.	Estimd.	
						Regulus.		
Mar.	22	1	2	F	+10·1	−10·9	−10·1	Cloud passing. Measures rough.
	29	1	2	F	+11·8	+17·1	+21·1	Star-line seen well.
Apr.	22	21	4	F	+16·3	− 0·5	+ 7·5	Star-line seen well.
	30	22	2	F	+17·2	−55·6	−49·4	Star-line faint.
May	17	22	1	F	+17·9	+ 9·7	+18·7	Spectrum bright and steady. Star-line seen well.
	21	22	2	F	+17·9	−66·1	−67·9	Measures made with difficulty.
	23	22	2	F	+17·8	−12·1	−12·7	Star-line seen well.
June	2	22	2	F	+17·4	−16·2	−15·4	Observations interrupted by cloud.
						γ Leonis.		
Mar.	29	1	2	F	+11·8	−15·9	−17·5	Star-line faint and difficult to see.
Apr.	22	22	2	F	+16·2	−28·1	−25·4	Star-line faint and difficult to see.
	30	22	2	F	+17·1	−44·8	−44·0	Star-line very faint.
May	21	22	2	F	+17·7	−27·1	−26·3	Star-line faint and difficult to see.
	23	22	2	F	+17·6	−18·4	− 7·4	Star-line very faint. Measures rough.
						β Ursæ Majoris.		
May	7	23	2	F	+12·7	−71·5	−58·7	Star-line ill-defined.
						α Ursæ Majoris.		
May	8	0	2	F	+11·6	−46·2	−46·1	Measures very rough.
Sept.	15	22	2	b_1	− 7·5	(+50·5)	(+56·8)	Star-line very faint and seen with great difficulty.
						β Leonis.		
Mar.	29	2	2	F	+ 5·6	+20·7	+22·6	Star-line seen fairly well.
Apr.	22	22	2	F	+12·0	+13·5	+24·8	Star-line seen fairly well.
	30	22	2	F	+13·6	−20·0	−19·4	Star-line seen fairly well.
May	21	22	2	F	+16·5	− 4·2	− 7·9	Star-line seen with difficulty.
	23	23	2	F	+16·7	+18·7	+30·0	Spectrum unsteady. Star-line very difficult to bisect.
						γ Ursæ Majoris.		
May	7	23	2	F	+12·0	−35·9	−36·6	Star-line ill-defined.
						δ Ursæ Majoris.		
May	7	23	2	F	+10·9	+ 6·0	+16·7	Star-line ill-defined.

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Date. 1890. G.C.T.	d	h	No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Measd.	Concluded Motion of Star. Estimd.	Remarks.
ε Ursæ Majoris.								
May	7	22	2	F	+ 9·9	−56·0	−50·9	Star-line seen fairly well.
Spica.								
Apr.	22	22	2	F	+ 3·3	+19·8	+23·6	Star-line seen fairly well.
	30	23	2	F	+ 5·6	−28·1	−28·6	Star-line seen fairly well.
May	12	22	1	F	+ 8·9	−53·6	−54·9	Observations interrupted by cloud.
	15	22	4	F	+ 9·7	−59·1	−53·1	Star-line seen fairly well.
	21	23	2	F	+11·1	+26·6	+24·7	Measures made with great difficulty.
	23	23	2	F	+11·6	−66·4	−67·6	Star-line seen well.
	31	23	4	F	+13·3	−63·5	−49·8	Star-line seen well.
ζ Ursæ Majoris.								
May	7	22	2	F	+ 8·9	−44·9	−54·9	Star-line ill-defined.
η Ursæ Majoris.								
May	7	22	2	F	+ 8·2	−17·5	−22·0	Star-line ill-defined.
Arcturus.								
Mar.	18	0	4	b_1	− 6·8	−28·6	−36·7	Spectrum very unsteady. Star-line distinct.
Apr.	22	22	2	F	+ 2·7	−26·6	−29·6	Star-line seen fairly well.
	30	23	4	F	+ 4·8	−37·2	−41·2	Star-line seen fairly well.
May	5	22	2	F	+ 5·9	−33·4	−34·8	Star-line very faint.
	7	21	2	F	+ 6·4	−31·6	−31·0	Star-line faint.
	15	22	2	F	+ 8·2	−40·4	−42·5	Star-line faint and seen with difficulty.
	21	23	2	F	+ 9·5	−45·5	−43·8	Star-line seen well.
	23	23	2	F	+ 9·9	−57·5	−60·8	Star-line seen fairly well.
	31	23	2	F	+11·3	−40·5	−37·0	Star-line seen fairly well.
June	27	23	2	F	+14·6	−37·7	−30·9	Star-line seen well now and then.
July	3	22	2	F	+15·0	−36·3	−35·5	Star-line seen with difficulty.
Aug.	6	22	2	F	+14·3	−55·0	−57·2	Star-line seen with great difficulty.
Sept.	15	21	4	b_1	+ 7·8	(−64·7)	(−62·0)	Spectrum faint and very unsteady.
β Ursæ Minoris.								
Sept.	15	22	2	b_1	− 3·5	(−44·2)	(−40·9)	Star-line seen with great difficulty.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star.		Remarks.
	d	h				Measd.	Estimd.	
β Libræ.								
Apr.	22	23	2	F	− 4·7	−16·6	−20·6	Star-line seen fairly well.
May	1	0	2	F	− 2·3	+ 6·7	+ 6·9	Star-line seen well.
	15	22	4	F	+ 2·2	−38·0	−40·3	Star-line seen well.
	24	0	2	F	+ 4·5	−22·9	−22·4	Star-line seen well.
	31	23	2	F	+ 6·8	−53·4	−47·4	Star-line seen fairly well.
June	6	23	2	F	+ 8·3	−47·5	−71·9	Star-line faint.
α Coronæ Borealis.								
Apr.	22	23	4	F	− 1·8	+31·6	+36·3	Star-line seen fairly well.
May	15	23	2	F	+ 3·2	+35·1	+38·0	Star-line seen well.
	22	0	2	F	+ 4·4	+18·7	+17·1	Star-line seen well.
	24	0	2	F	+ 4·8	+25·3	+30·8	Star-line seen well.
	31	23	2	F	+ 6·3	+ 8·6	+ 5·9	Star-line seen fairly well.
June	27	23	2	F	+10·5	−10·9	− 6·3	Star-line seen fairly well.
July	3	22	2	F	+11·1	−16·6	−13·9	Star-line seen fairly well.
Aug.	6	22	2	F	+12·8	−78·4	−63·7	Spectrum faint and very unsteady. Star-line exceedingly ill-defined.
Sept.	8	21	2	F	+10·6	−26·9	−23·5	Star-line seen well.
α Ophiuchi.								
Apr.	30	23	4	F	− 9·5	−17·4	−10·8	Star-line very broad and diffused.
May	15	23	4	F	− 6·4	− 9·9	− 7·3	Star-line very broad and diffused.
	22	0	2	F	− 5·0	− 6·1	− 7·9	Star-line seen fairly well.
	24	0	2	F	− 4·5	−13·3	−12·5	Star-line broad and diffused.
	31	24	2	F	− 2·6	−19·2	−17·7	Star-line seen fairly well.
June	7	0	2	F	− 1·2	−10·8	−10·2	Star-line seen fairly well.
	27	23	2	F	+ 3·8	−26·0	−20·6	Star-line seen well.
July	3	23	2	F	+ 5·2	−38·9	−36·0	Star-line unusually broad and diffused.
Aug.	1	22	2	F	+10·9	−46·3	−32·1	Definition poor.
	6	23	2	F	+11·6	−47·5	−43·4	Spectrum faint. Star-line ill-defined.
Sept.	8	22	2	F	+14·7	−35·1	−38·8	Star-line very ill-defined and difficult to observe.
Vega.								
May	1	0	2	F	− 7·7	−30·8	−26·1	Star-line seen well.
	15	23	2	F	− 6·4	− 3·7	− 2·7	Star-line very broad and diffused.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in miles per sec.	Concluded Motion of Star. Measd.	Estimd.	Remarks.
	d	h						
						Vega (continued).		
May	22	1	2	F	− 5·8	−53·1	−51·3	Star-line seen well.
	24	0	2	F	− 5·6	−10·1	−12·3	Star-line seen well.
June	1	0	2	F	− 4·7	−25·5	−21·7	Star-line seen well.
July	3	23	2	F	− 0·3	−63·1	−46·3	Star-line seen well.
Aug.	1	23	2	F	+ 3·7	− 8·0	− 8·6	Star-line seen well.
	6	23	2	F	+ 4·3	−10·4	− 9·1	Star-line seen fairly well.
Sept.	8	22	2	F	+ 7·6	−26·0	−18·3	Spectrum bright but unsteady.
	13	21	2	F	+ 7·9	−24·6	−25·8	Star-line seen well.
	24	21	4	F	+ 8·5	−34·8	−34·4	Cloud passing.
Oct.	1	21	2	F	+ 8·7	−14·5	− 8·7	Definition bad.
	3	21	2	F	+ 8·7	−21·0	−23·5	Definition fair.
	9	20	2	F	+ 8 7	−45·0	−41·8	Star-line seen fairly well.
	11	21	2	F	+ 8·7	−41·5	−34·9	Definition bad.
	16	19	4	F	+ 8·6	−37·5	−31·6	Definition poor. Wind high.
						γ Lyræ.		
Aug.	1	23	2	F	+ 3·4	+ 7·5	+11·3	Star-line seen fairly well.
	6	23	2	F	+ 4·2	−16·2	−13·7	Star-line seen fairly well.
Sept.	13	21	2	F	+ 9·1	−29·8	−15·9	Spectrum extremely faint.
						ζ Aquilæ.		
Aug.	1	23	2	F	+ 5·2	− 7·7	− 5·2	Star-line seen fairly well.
	6	23	2	F	+ 6·3	−13·7	−11·1	Star-line seen with difficulty.
Sept.	13	21	2	F	+13·0	+10·4	+10·0	Spectrum extremely faint.
						δ Cygni.		
Aug.	7	0	2	F	0·0	−70·7	−52·5	Star-line faint and ill-defined.
Sept.	13	21	2	F	+ 4·6	+ 8·6	+22·6	Star-line seen fairly well.
						Altair.		
May	16	0	2	F	−14·2	− 5·2	− 1·8	Star-line seen well.
	24	0	2	F	−13·2	−20·7	−19·0	Star-line seen well.
June	1	0	2	F	−11·9	−10·0	− 8·4	Star-line seen well.
	28	0	2	F	− 6·3	−47·0	−27·2	Star-line seen well.
July	3	23	2	F	− 4·9	−57·4	−41·7	Star-line seen fairly well.
Aug.	1	22	2	F	+ 2·5	−45·2	−46·5	Star-line seen well.
	4	22	2	F	+ 3·3	−44·2	−39·2	Star-line seen fairly well.
	6	23	2	F	+ 3·8	−72·9	−70·6	Star-line seen fairly well.
Sept.	8	22	2	F	+11·4	−32·4	−30·1	Star-line seen well.
	13	22	2	F	+12·3	−30·8	−40·4	Star-line seen fairly well.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in Miles per sec.	Concluded Motion of Star. Measd	Concluded Motion of Star. Estimd.	Remarks.
	d	h						
					Altair (continued).			
Oct.	1	22	2	F	+14·9	−35·3	−31·5	Definition bad.
	3	21	2	F	+15·1	−56·4	−51·3	Definition fair.
	9	21	2	F	+15·6	−44·0	−38·1	Star-line seen fairly well.
	11	21	2	F	+15·8	−76·6	−55·1	Definition bad.
	16	20	2	F	+16·1	−45·0	−37·6	Definition bad. Observations interrupted by cloud.
					γ Cygni.			
Oct.	11	21	2	F	+ 8·2	−51·2	−41·5	Definition bad.
					α Cygni.			
May	16	0	2	F	− 8·9	−51·2	−41·4	Star-line seen fairly well.
July	3	23	1	F	− 7·0	−42·4	−48·8	Observations interrupted by cloud.
Aug.	4	22	2	F	− 3·3	−64·8	−66·0	Star-line seen fairly well.
Sept.	8	23	2	F	+ 1·9	−47·8	−42·0	Spectrum bright and steady.
	13	22	2	F	+ 2·7	−28·5	−41·0	Spectrum fairly bright and steady.
Oct.	1	22	2	F	+ 5·3	− 4·7	− 5·3	Definition bad.
	3	22	2	F	+ 5·5	−36·6	−31·8	Star-line seen fairly well.
	9	21	2	F	+ 6·3	−42·3	−43·9	Star-line seen fairly well.
	11	21	2	F	+ 6·5	−33·9	−23·4	Definition poor.
					α Cephei.			
May	16	0	2	F	− 4·5	−38·1	−29·1	Star-line seen well.
Aug.	1	23	2	F	− 5·6	−87·8	−92·2	Star-line seen with the utmost difficulty.
Oct.	11	22	2	F	+ 0·8	−26·6	−19·9	Definition very bad.
	16	20	2	F	+ 1·4	−16·9	−16·1	Observing position very awkward.
					α Pegasi.			
Aug.	2	0	2	F	−11·3	−29·6	−27·8	Star-line seen fairly well.
	7	0	2	F	−10·0	−28·0	−25·8	Star-line seen fairly well.
Sept.	8	23	2	F	− 1·7	−21·9	−19·7	Star-line faint and seen with difficulty.
	11	23	2	F	− 0·9	−43·8	−47·5	Star-line seen well.
	13	22	4	F	− 0·3	+22·1	+20·3	Star-line seen fairly well.
Oct.	1	22	2	F	+ 5·0	−24·6	−23·0	Definition poor.
	9	21	2	F	+ 7·2	−19·5	−26·8	Star-line seen fairly well.
	11	22	2	F	+ 7·8	−27·4	−23·3	Definition poor.

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Date. 1890. G.C.T.			No. of Meas.	Line.	Earth's Motion in Miles per sec.	Concluded Motion of Star.		Remarks.
						Measd.	Estimd.	
						Mars.		
	d	h						
May	31	23	2	F	...	− 2·0	0·0	Calculated motion −0·8.
June	7	0	2	F	...	− 6·1	0·0	Calculated motion +0·3.
					Great Nebula in Orion.			
Mar.	17	20	7	N_1	+16·2	− 7·4	...	Compared with Nitrogen. Observations too rough to give a satisfactory determination of displacement. Resulting wave-length of nebular line λ 5005·0, assuming that of the nitrogen as λ 5005·2.
						Moon.		
Mar.	3	22	5	F	...	− 2·3	...	The coincidence of the lines in the two spectra appeared perfect.
	28	23	5	F	...	− 2·4	...	
Apr.	30	22	5	F	...	+ 1·1	...	
May	5	22	5	F	...	+ 2·2	...	
	23	22	5	F	...	− 1·3	...	
	31	23	5	F	...	+ 1·7	...	
June	27	23	5	F	...	+ 1·2	...	
July	3	23	5	F	...	+ 2·6	...	
Aug.	2	0	5	F	...	+ 2·2	...	
	7	1	5	F	...	− 2·2	...	
						Sun.		
May	16	12	5	F	...	+ 1·1	...	The coincidence of the lines in the two spectra appeared perfect.
						Sky.		
Mar.	14	12	5	F	...	− 2·9	...	The coincidence of the lines in the two spectra appeared perfect.
	18	12	5	b_1	...	+ 1·0	...	
Sept.	10	12	5	F	...	+ 1·0	...	
	15	11	5	F	...	+ 3·5	...	
	17	12	5	b_1	...	− 8·6	...	The sky spectrum was found to be displaced towards the blue by a very small but unmistakable amount.

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Observations of Occultations of Stars by the Moon and of Phenomena of Jupiter's Satellites, made at the Royal Observatory, Greenwich, in the year 1890.

(Communicated by the Astronomer Royal.)

Occultations of Stars by the Moon.

Day.		Phenomenon.	Telescope.	Power.	Moon's Limb.	Mean Solar Time of Observation. h m s	Observer.
1890 Jan.	15 (*a*)	Reapp. o^1 Libræ	Simms' No. 1	75	Dark	16 31 6·25	A. M.
Feb.	7 (*b*)	Disapp. ν Virginis	Lassell Refl.	280	Bright	11 6 7·08	L.
	7 (*c*)	„ ν Virginis	E. Equat.	140	„	11 6 6 12	H.
	7	„ ν Virginis	Altaz.	100	„	11 6 3·41	S. D.
	7	Reapp. ν Virginis	„	100	Dark	12 19 59·83	L.
	7	„ ν Virginis	E. Equat.	140	„	12 19 59·92	H.
Mar.	29 (*d*)	Disapp. 7 Cancri	Altaz.	100	„	13 10 18·63	T.
Apr.	7 (*e*)	Reapp. ζ^1 Libræ	„	100	„	15 28 9·84	J. P.
	7	„ ζ^1 Libræ	E. Equat.	70	„	15 28 9·07	W.R.
	30	Disapp. ν Virginis	E. Equat.	140	„	10 58 12·83	H.
	30	„ ν Virginis	Altaz.	100	„	10 58 12·98	S. D.
	30	Reapp. ν Virginis	„	100	Bright	11 48 22·97	S. D
May	3	Disapp. 95 Virginis	E. Equat.	140	Dark	8 50 23·13	A. D.
	3	„ κ Virginis	Altaz.	100	„	13 7 31·36	H. T.
	3	„ κ Virginis	E. Equat.	140	„	13 7 31·36	A. D.
June	2 (*f*)	„ ω Ophiuchi	Altaz.	100	Bright	10 5 51·28	H. T.
	2 (*g*)	„ ω Ophiuchi	E. Equat.	210	„	10 5 54·96	A. D